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MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			EXAMINER LAI, ANDREW	
			ART UNIT 2616	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/518,140

Applicant(s)

JANNETEAU ET AL.

Examiner

Andrew Lai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/10/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings of fig. 28 are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "2800" has been used to designate both "Home Address #1" and as general numeral for the whole fig. 28. It appears, in light of the Specification, the numeral "2800" for "Home Address #1" should be replaced with "**2815**" instead. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 13 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter of "a communication message..." While it is

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statutory to claim a method, apparatus, system, etc., of sending/receiving/processing a communication message, which is essentially a signal, a message or signal itself is a non-statutory subject matter.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

Claim 1 recites the limitation of *receiving a route message from said second communication node, wherein said route message includes a list of a plurality of intermediary addresses between said first communication node and said second communication node...*

This limitation requires for the *second node* to know what are the intermediary addresses that should be included in the route message to be sent to the first node.

This step is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 17 and 18, the phrase "for example" (claim 17 first and second clauses and claim 18 first clause) renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention.

See MPEP § 2173.05(d). In order to be able to continue with this Office Action,

Examiner is compelled to read these two claims as:

Claim 17, *A communication node comprising: an interface for communication with other communication nodes; ~~for example in a mobile network~~;*

...

a memory element storing ...; ~~for example nodes in the mobile network~~;
a processor...

Claim 18, *A communication node comprising: an interface for communication with other communication modes; ~~for example in a mobile network~~;*

...

a receiver ... ~~in the mobile network~~; and
a processor...

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claims 1-6, 10-12, 17, 18 are rejected under 35 U.S.C. 102(a) as being anticipated by Ernst ("Network Mobility Support in IPv6", a thesis present in fulfillment of the requirement for the degree of Doctor of Philosophy to the Department of Mathematics and Computer Science at Universite Joseph Fourier, France, October 29, 2001).

Ernst discloses a work “devoted to the study of network mobility support in IPv6” (Abstract line 1) comprising the following features:

- **Regarding independent claims 1, 17 and 18**

Claim 1, *a method of transmitting a data packet* (see “We propose extending Mobile IPv6 with new features” recited Abstract lines 10-11) *on a communication path* (p90 fig. 7.6 “MR [mobile router] registration for a VMN [visiting mobile node]”, noting the data path carrying “Payload 3” from the “CN [correspondent node]” to the “VMN” via the “MR”) *from a first communication node* (p90 fig. 7.6, the “CN” of said data path carrying “Payload 3”) *to a second communication node* (p90 fig. 7.6, the “VMN” of data path carrying “Payload 3”) *in a mobile network* (see “the VMN is currently in the mobile network” recited p89 subsection 7.1.3.1, “Nested Mobility”, first paragraph lines 2-3), *the method comprising the steps of:*

receiving a route message (p90 fig. 7.6 “Binding Update 2”) *from said second communication node* (“VMN” in said fig. 7.6 and noting shown therein said “Binding Update 2” being received by said “CN” and see further “Thus, Prefix Scope Binding Update could also be sent to VMN’s CNs” recited p91 first paragraph line 1) *wherein said route message includes a list of a plurality of intermediary addresses between said first communication node and said second communication mode* (see “Thus, Prefix Scope Binding Update could also be sent to VMN’s CNs. In order to insure optimal routing, the Routing Extension Header must be filled with two addresses” recited p91 first paragraph lines 1-2), *the plurality of intermediary addresses comprising an address of a mobile router* (see “the Routing Extension Header must be filled in the right order

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so that packets are first routed to the MR_{coa}, then to VMN_{coa}" recited p91 first paragraph lines 4-5, noting that MR_{coa} therein stands for "mobile router's careof address")

generating a preferred communication path in response to said list of intermediary addresses; and transmitting said at least one data packet from said first communication node to said second communication node via said preferred communication path (see "This [above "Binding Update" step] requires extensions in the CN Operation to record two addresses in the Binding Cache and to return both addresses when there is a pending packet for the VMN" recited p90 first paragraph lines 1-3).

Claim 17, a communication node (see node "CN [correspondent node]", p90 fig. 7.6 "MR [mobile router] Registration for a VMN [visiting mobile node]") comprising:

an interface for communicating with other communication nodes (fig. 7.6 depicting communication, for example, path with "Payload 3" from said "CN" to an "MR [mobile router] and further to the "VMN", which necessarily requires the "CN" to have a transmission interface);

the communication node comprising:

a memory element storing an extended binding cache containing routes and/or source route information relating to a plurality of communication nodes (see "Binding Cache" associated with said "CN" depicted as "MR FEC4:700:AAA:10/56 → FEC4:700:BBBB:200A/64" and "toto.foo FEC4:700:111:ABCD/64 → FEC4:700:AAAA:100F/64");

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a processor, operably coupled to said memory element, for generating a route, based on information stored in the extended binding cache (see "This requires extensions in the CN Operation to record two addresses in the Binding Cache and to return both addresses when there is a pending packet for the VMN" recited p90 first paragraph lines 1-3, which must require the CN to have a processor operably couple to said memory in order to be able to perform said functionalities); and

a transmitter, operably coupled to said processor, for delivering a data packet to an intended recipient via said route (p90 fig. 7.6 see the packet route carrying "Payload 3" from said "CN" to said "VMN" via said "MR", noting that for this to happen, a transmitter has to exist in the CN and it has to be operably coupled to said processor).

Claim 18, *a communication node (see node "CN [correspondent node]", p90 fig. 7.6 "MR [mobile router] Registration for a VMN [visiting mobile node]") comprising:*

an interface for communicating with other communication nodes (fig. 7.6 depicting communication, for example, path with "Binding Update 1" from said "MR" to said "CN", which necessarily requires the "CN" to have a receiving interface);

the communication node comprising:

a receiver operably coupled to said interface, receiving an extended binding update message containing route information relating to a communication node (see fig. 7.6 depicting said "CN" receiving "Binding Update 1" on a communication path from said "MR", which necessarily requires a receiver in the "CN" operably coupled to said interface in order to be able to receive said "Binding Update 1"); and

a processor, operably coupled to said receiver, for generating a care of source route message, based on information contained in the extended binding update message, the care of source route message comprising an intermediary address of a mobile router (see "Thus, Prefix Scope Binding Update could also be sent to VMN's CNs. In order to insure optimal routing, the Routing Extension Header must be filled with two addresses" recited p91 first paragraph lines 1-2, and further see "the Routing Extension Header must be filled in the right order so that packets are first routed to the MR_{coa}, then to VMN_{coa}" recited p91 first paragraph lines 4-5, noting that MR_{coa} therein stands for "mobile router's careof address")

- **Regarding independent claims**

Claim 2, *said data communication network supports nested network mobility operation (see p89 subsection "7.1.3.1 Nested Mobility") and said step of transmitting includes the step of:*

routing said at least one data packet via a plurality of mobile routers identified by said intermediary addresses in said nested mobility network (refer to p90 fig. 7.6 the data path carrying "Payload 3" from the "CN" to the "VMN" via the MR, and see "packets are first routed to the MR_{coa}, then to VMN_{coa}" recited p91 first paragraph line 5).

Claim 3, *said data communication network operates in accordance with an IPv6 and/or IPv4 specification (see "...performed by the VMN by means of existing Mobile IPv6" recited subsection 7.1.3.1 on p89 first paragraph lines 1-2).*

Claim 4, *said first communication node (the "CN" in fig. 7.6) is a correspondent node (noting that "CN" stands for "correspondent node" as denoted throughout Ernst,*

e.g. fig. 1.5 on p10) of the said second communication node (the "VMN" in fig. 7.6 and see "Prefix Scope Binding Update could also be sent to VMN's CNs" recited p90 first paragraph line 1) and/or said second communication node is a mobile network node (noting that "VMN" stands for "visiting mobile node" throughout Ernst, e.g. p11 paragraph 4 line 1).

Claim 5, the method further comprising the step of:

sending an advertising message, by a plurality of communication nodes in the mobile network, that includes route information related to communication nodes attached to said second communication mode, so that a communication path to an intended recipient can be determined (see "Neighbor Advertisements: used to ... and to advertise a new link-layer address" recited p20 subsection "2.2.3 Neighbor Discovery" paragraph 3 and "Router Advertisements used by routers to advertise their presence... They provide a list of prefixes" recited p20 subsection "2.2.3 Neighbor Discovery" paragraph 5, and "The Prefix Scope Binding Update instructs CNs to add a binding between the mobile network prefix and the mobile router's careof address, i.e. a network route in their Binding Cache" recited p86 subsection 7.1.1 paragraph 2 lines 1-2).

Claim 6, said list of the plurality of intermediary addresses includes addresses of one or more mobile routers above the second communication node in a route hierarchy for delivering said data packet to an intended recipient (see "the Routing Extension Header must be filled in the right order so that packets are first routed to the MR_{coa}, then to VMN_{coa}" recited p91 first paragraph lines 4-5, noting that MR_{coa} therein stands for

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"mobile router's careof address" and VMN_{coa} stands for "visiting mobile node's careof address", and for the *hierarchy* of the "MR" and "VMN" see fig. 7.6 depicting that the *mobile router* ("MR") *above the second communication node* ("VMN")).

Claim 10, *the method of transmitting a data packet according to claim 5 further comprising the step of: sending periodically said route advertising message to all or a selected number of communication nodes in the mobile network* (see "addresses are configured by listening to network prefixes advertised by Neighbor Discovery Router Advertisements" recited p20 subsection "2.24 Address Configuration" second paragraph lines 1-2).

Claim 11, *the method of transmitting a data packet according to claim 5, the method further comprising the step of: sending a mobile network prefix advertisement message by a mobile router at a top of a routing hierarchy in the mobile network to advertise said mobile network prefix* (see "Router Advertisements used by routers to advertise their presence... They provide a list of prefixes" recited p20 subsection "2.2.3 Neighbor Discovery" paragraph 5); *and*

determining by communication nodes in the same mobile network that they are located within the sending mobile router's mobile network (see "The MN [mobile node] establishes the binding between the current RCoA and the LCoA with the MAP [mobility anchor point or mobile router]" recited p36 subsection "3.1.2.1 Basic Mode" paragraph 1 lines 4-5, noting that RCoA is the careof address of the router (or MAP) and LCoA the careof address of the MN).

Claim 12, *sending an extended binding update message containing route information only to communication nodes outside of the sending communication node's mobile network* (see "extends Mobile IPv6 and separates Local-Area Mobility from Wide-Area Mobility. The main benefit of this proposal is to render Local-Area Mobility transparent to CNs" recited p35 subsection "3.1.2 IETF Hierarchical Mobile IPv6" paragraph 1 lines 2-3).

Claim 13, *a communication message having route information that includes an ordered list of a plurality of intermediary addresses comprising at least one address of a mobile router between a first communication mode and a second communication node, for use in the method of claim 5* (see "Neighbor Advertisements: used to ... and to advertise a new link-layer address" recited p20 subsection "2.2.3 Neighbor Discovery" paragraph 3 and "Router Advertisements used by routers to advertise their presence... They provide a list of prefixes" recited p20 subsection "2.2.3 Neighbor Discovery" paragraph 5, and "The Prefix Scope Binding Update instructs CNs to add a binding between the mobile network prefix and the mobile router's careof address, i.e. a network route in their Binding Cache" recited p86 subsection 7.1.1 paragraph 2 lines 1-2).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernst ("Network Mobility Support in IPv6", a thesis present in fulfillment of the requirement for the degree of Doctor of Philosophy to the Department of Mathematics and Computer Science at Universite Joseph Fourier, France, October 29, 2001) in view of Inoue et al (US 6,587,882, Inoue hereinafter).

Ernst discloses claimed limitations in paragraph 8 above. Ernst further discloses the following features:

Claim 7, *requesting transmission of one or more advertisement messages* (p20 subsection 2.2.3 "Neighbor Discovery" and, see in general "Neighbor Discovery is the protocol used by IPv6 nodes on the same link to discover the presence of other nodes and their link-layer addresses, to find routers, and to maintain the connection with the neighbor subnet" recited p20 subsection 2.2.3 paragraph 1, and see in particular "Neighbor Solicitations: used to determine the link-layer address" recited paragraph 2 thereof), *containing route information of one or more IP addresses* (see "Neighbor Advertisements: used to respond to Neighbor Solicitations and to advertise a new link-layer address" recited paragraph 3 thereof), *from adjacent communication nodes* (again as suggested "Neighbor Discovery" process).

Ernst does not disclose expressly that above steps are performed *when said second communication node moves to a new location within the mobile network*.

Inoue discloses "a mobile IP communication scheme in which a visited site or nearby network of a mobile computer is unitized as a temporal home of a mobile computer" (Abstract lines 1-3 and see fig. 1 e.g. "network 1-1" with "MA [mobile agent]

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5" and "MN [mobile computer node] 2") comprising performing network configuration acquisition *when said second communication node moves to a new location within the mobile network* (refer to fig. 11 and see, first, "when the registration message is accepted, the query message for the network configuration information of this visited site network is sent to the mobile computer management server 5" recited col. 18 line 53-56, and see further fig. 12 step S11 "care-of-address acquisition processing", step S12 "processing for judging whether it is in the same subnet as MA [mobile computer management server] or not", step S13 "same subnet" "YES", and then step 16 "network configuration information of visited site network acquisition processing")

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Ernst by adding Inoue's feature of the network configuration acquisition upon registration to Ernst in order to provide a more robust mechanism for mobility wherein "it is possible to construct a mobile IP communication environment in which a visited site network or a nearby network is regarded as a home network" (Inoue col. 3 lines 38-40) which would avoid the "need for making an extra setting ... disadvantageous from a viewpoint of the performance of packet exchange with the home network" (col. 3 lines 26-29).

11. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernst ("Network Mobility Support in IPv6", a thesis present in fulfillment of the requirement for the degree of Doctor of Philosophy to the Department of Mathematics

Science at Universite Joseph Fourier, France, October 29, 2001) in view of Baba et al (US 6,799,204, Baba hereinafter).

Ernst discloses claimed limitations in paragraph 8 above. Ernst further discloses the following features:

Claim 8, *extracting intermediary route messages from said route information in said advertising message at a communication node* (see "Neighbor Advertisements: used to respond to Neighbor Solicitations and to advertise a new link-layer address" recited p20 subsection 2.2.3 paragraph 3, noting that this operation as a response to Neighbor Solicitations necessarily prompts the solicitor node to extract the link-layer address as *intermediary route message*).

Claim 9, *appending a route message of the communication unit to said list of intermediary routes in said advertising message at said communication node* (see "The Hop-by-Hop Options Header carries additional information that must be processed by each intermediate router" recited p18 paragraph 3 and "IPv6 also defines encapsulation as a means to force a packet to take a different route. This is performed by enclosing the original packet as the payload of a new packet and by appending a new IPv6 Header specifying the new destination" recited p18 paragraph 6 lines 1-3)

Ernst does not disclose expressly the following feature:

For claim 8, *transmitting said intermediary route messages to communication nodes that the extracting communication mode serves.*

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Baba disclose a "method, system, apparatus and product for providing dynamic registration and configuration of mobile clients in end to end wireless/wireline Internet Protocol (IP) networks" (col. 1 lines 12-16) comprising the features of:

Claim 8, ... *transmitting said intermediary route messages to communication nodes that the extracting communication mode serves* (see

"DRCP_ADVERTISEMENT: Server periodically broadcasts (or unicast in response to a client using an incorrect address) the network information (such as Server IP address or Network address). Listening to this, client can understand the subnet change" recited col. 4 lines 63-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Ernst by adding the route message broadcast means of Baba to Ernst in order to provide a more efficient system wherein "registration functionality would enable roaming mobile hosts to rapidly and automatically register their presence and their requirements with networks" as pointed out by Baba (p3 lines 6-8).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,095,480 provides a message routing system for shared communication media networks using unique identification codes of the transmitting and receiving stations and the addresses of the intermediate routing devices for determining routing.

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US 6,097,703 disclose an adaptive multi-hop packet radio network utilizing opportunistic peak-mode transmissions to transmit data between originating and destination stations using intermediated addresses of relaying stations.

US 2002/0191593 discloses method and apparatus for supporting session signaling and mobility management in a communication system.

US 6,990,111 provides an adaptive path discovery method for routing data in a multimode network wherein path-packets are used by intermediate/destination nodes to notify source node of route/path information for the latter to send subsequent packets.

US 6,587,438 discloses a world wide web server that finds optimal path to a single client node.

US 2003/0007475 provides a method between two mobility serving nodes and low latency mobile initiated tunneling handoff using neighbor discovery method.

US 2002/0159463 discloses a method and protocol for managing broadband IP services wherein IP address advertisement is used for advertising flow routing information to downstream nodes in a registration process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Lai whose telephone number is 571-272-9741. The examiner can normally be reached on M-F 7:30-5:00 EST, Off alternative Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER

AL

A handwritten signature in black ink, appearing to read 'Kwong Bin Yao', is written over the printed name and title.